

WEBSTER UNIVERSITY

COURSE SYLLABUS

MTHC 5130.01
COURSE NUMBER AND SECTION

Andrea Rothbart
INSTRUCTOR

PROBABILITY and GRAPHS
COURSE TITLE

TERM: Fall 2004

50
SITE

1. **Course Description: (Student focus, rationale, scope, prerequisites)**

This course is designed to introduce middle school teachers to probability and to topics in Discrete Mathematics, including graphs, trees, and Finite State Machines.

2. **Learning Outcomes: (Goals, objectives, course outcomes, etc.)**

Students will:

- have experience in applying the concepts of probability to a variety of situations- most notably games and gambling;
- learn some applications of topics in Discrete Mathematics; and
- be introduced to ideas for presenting these concepts to middle school children

3. **Schedule of required readings, class preparations and assignments, lectures, discussions, student presentations, and exams:**

CLASS 1: Chromatic numbers and applications; The seating compatible people problem;

CLASSES 2/3: Graphs; The bridge of Konigsberg; Path Problems; Adjacency Matrices

CLASSES 4/5: Trees; Binary trees; Huffman codes

CLASS 6: Quiz; Polish and Reverse Polish Notation

CLASS 7: Finite state machines

p.2 Probability and Graphs syllabus

CLASSES 8-9: Expected Value and applications to dice games

CLASS 10: Roulette, craps, and chuck-a-luck.

CLASS 11 Quiz

CLASSES 12-13 Pascal's triangle; Counting techniques

CLASSES 14-15: Basic concepts of descriptive Statistics

CLASS 16: Quiz

4. **RESOURCES:**

Text Used: No textbook; the instructor will distribute relevant materials

5. **EVALUATION:**

- a) Term Paper (No)
- b) Examinations **(Yes)**
- c) Class participation **(Yes)**
- d) Class presentation (No)

This syllabus is subject to change at the discretion of the instructor. Therefore, regular attendance is required.